

What is claimed is:

1. A display apparatus having a plurality of electron emitters arrayed in association with a plurality of pixels,
5 for emitting electrons from the electron emitters to display an image, characterized in that

necessary charges are accumulated in all the electron emitters in a first period; and

10 a voltage required to emit electrons is applied to all the electron emitters to cause a plurality of electron emitters which correspond to pixels to emit light therefrom, for emitting light from said pixels, in a second period after said first period.

15 2. A display apparatus according to claim 1,
characterized by:

a drive circuit for scanning all the electron emitters to apply necessary voltages to the electron emitters;

20 wherein one image is displayed in a period as one frame, said one frame including said first period and said second period;

wherein said drive circuit scans all said electron emitters and applies accumulation voltages depending on the luminance levels of corresponding pixels to the electron emitters which correspond to pixels to emit light therefrom
25 in said first period, and applies a constant emission voltage to all the electron emitters in the second period

after said first period;

wherein charges in amounts depending on the luminance levels of corresponding pixels are accumulated in the electron emitters which correspond to pixels to emit light therefrom in said first period; and

wherein electrons are emitted in amounts depending on the luminance levels of corresponding pixels from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the pixels.

3. A display apparatus according to claim 1,
characterized by:

a drive circuit for scanning all the electron emitters
to apply necessary voltages to the electron emitters;

wherein one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having respective different luminance levels, each of said periods serving as one subfield, said one subfield including said first period and said second period;

wherein said drive circuit scans all said electron emitters and applies a constant accumulation voltage to the electron emitters to emit light therefrom in said first period, and applies emission voltages depending on luminance levels assigned to the subfields to all said electron emitters in the second period after said first period;

wherein a constant amount of charges are accumulated in

the electron emitters to emit light therefrom in said first period; and

5 wherein electrons are emitted in amounts depending on the luminance levels assigned to the subfields from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the pixels.

10 4. A display apparatus according to claim 1,
characterized by:

a drive circuit for scanning all the electron emitters to apply necessary voltages to the electron emitters;

15 wherein one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having respective different luminance levels, each of said periods serving as one subfield, said one subfield including said first period and said second period;

20 wherein said drive circuit scans all said electron emitters and applies accumulation voltages depending on luminance levels assigned to the subfields to the electron emitters to emit light therefrom in said first period, and applies a constant emission voltage to all said electron emitters in the second period after said first period;

25 wherein charges in amounts depending on the luminance levels assigned to the subfields are accumulated in the electron emitters to emit light therefrom in said first period; and

wherein electrons are emitted in amounts depending on
the luminance levels assigned to the subfields from the
electron emitters which correspond to pixels to emit light
therefrom in said second period, thereby emitting light from
5 the pixels.

5. A display apparatus according to claim 1,
characterized by:

a drive circuit for scanning all the electron emitters
10 to apply necessary voltages to the electron emitters;

wherein one image is displayed in a period as one
frame, said one frame being divided into a plurality of
periods having the same luminance level, each of said
periods serving as one linear subfield, said one linear
15 subfield including said first period and said second period;

wherein said drive circuit scans all said electron
emitters and applies a constant accumulation voltage to the
electron emitters to emit light therefrom in said liner
subfields in said first period, and applies a constant
20 emission voltage to all said electron emitters in the second
period after said first period;

wherein a constant amount of charges are accumulated in
the electron emitters to emit light therefrom in said linear
subfields in said first period; and

25 wherein a constant amount of electrons are emitted from
the electron emitters which correspond to pixels to emit
light therefrom in the linear subfields in said second

period, thereby emitting light from the pixels.

6. A display apparatus according to claim 1,
characterized by:

5 a drive circuit for scanning all the electron emitters
to apply necessary voltages to the electron emitters;

wherein one image is displayed in a period as one
frame, said one frame including said first period and said
second period;

10 wherein said drive circuit applies a constant
accumulation voltage to all said electron emitters in said
first period, and scans all said electron emitters and
applies emission voltages depending on the luminance levels
of corresponding pixels to the electron emitters which
15 correspond to pixels to emit light therefrom in said second
period after said first period;

 wherein a constant amount of charges are accumulated in
all said electron emitters in said first period; and

20 wherein electrons are emitted in amounts depending on
the luminance levels of corresponding pixels from the
electron emitters which correspond to pixels to emit light
therefrom in said second period, thereby emitting light from
the pixels.

25 7. A display apparatus according to claim 1,
characterized by:

 a drive circuit for scanning all the electron emitters

to apply necessary voltages to the electron emitters;
wherein one image is displayed in a period as one
frame, said one frame being divided into a plurality of
periods having respective different luminance levels, each
of said periods serving as one subfield, said one subfield
including said first period and said second period;

5 wherein said drive circuit applies accumulation
voltages depending on luminance levels assigned to the
subfields to all said electron emitters to emit light
therefrom in said first period, and scans all said electron
emitters and applies a constant emission voltage to said
10 electron emitters to emit light therefrom in the second
period after said first period;

15 wherein charges in amounts depending on the luminance
levels assigned to the subfields are accumulated in all said
electron emitters in said first period; and

20 wherein electrons are emitted in amounts depending on
the luminance levels assigned to the subfields from the
electron emitters which correspond to pixels to emit light
therefrom in said second period, thereby emitting light from
the pixels.

8. A display apparatus according to claim 1,
characterized by:

25 a drive circuit for scanning all the electron emitters
to apply necessary voltages to the electron emitters;
wherein one image is displayed in a period as one

frame, said one frame being divided into a plurality of periods having respective different luminance levels, each of said periods serving as one subfield, said one subfield including said first period and said second period;

5 wherein said drive circuit applies a constant accumulation voltage to all said electron emitters in said first period, and scans all said electron emitters and applies emission voltages depending on the luminance levels assigned to the subfields to the electron emitters to emit
10 light therefrom in said second period after said first period;

 wherein a constant amount of charges are accumulated in all said electron emitters in said first period; and

15 wherein electrons are emitted in amounts depending on the luminance levels assigned to the subfields from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the pixels.

20 9. A display apparatus according to claim 1,
characterized by:

 a drive circuit for scanning all the electron emitters to apply necessary voltages to the electron emitters;

25 wherein one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having the same luminance level, each of said periods serving as one linear subfield, said one linear

subfield including said first period and said second period;

wherein said drive circuit applies a constant accumulation voltage to all said electron emitters in said first period, and scans all said electron emitters and applies a constant emission voltage to the electron emitters to emit light therefrom in the linear subfields in said second period after said first period;

wherein a constant amount of charges are accumulated in the electron emitters to emit light therefrom in the linear subfields in said first period; and

wherein a constant amount of electrons are emitted from the electron emitters which correspond to pixels to emit light therefrom in the linear subfields in said second period, thereby emitting light from the pixels.

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10. A display apparatus according to claim 2,
characterized in that

said drive circuit comprises:

a pulse generating circuit for generating a pulse signal having a constant pulse amplitude; and

an amplitude modulating circuit for amplitude-modulating said pulse signal to generate said accumulation voltage in said first period.

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11. A display apparatus according to claim 2,
characterized in that

said drive circuit comprises:

a pulse generating circuit for generating a pulse signal applicable to said electron emitters, said pulse signal having a voltage waveform including a positive-going edge or a negative-going edge which is continuously variable
5 in level; and

a pulse width modulating circuit for pulse-width-modulating said pulse signal to generate said accumulation voltage in said first period.

10 12. A display apparatus according to claim 3,
characterized in that

said drive circuit comprises:

a pulse generating circuit for generating a pulse signal having a constant pulse amplitude; and
15 an amplitude modulating circuit for amplitude-modulating said pulse signal to generate said emission voltage in said second period.

20 13. A display apparatus according to claim 3,
characterized in that

said drive circuit comprises:

a pulse generating circuit for generating a pulse signal applicable to said electron emitters, said pulse signal having a voltage waveform including a positive-going edge or a negative-going edge which is continuously variable
25 in level; and

a pulse width modulating circuit for pulse-width-

modulating said pulse signal to generate said emission voltage in said second period.

14. A display apparatus according to claim 1, wherein
5 said electron emitters have such characteristics that the electron emitters change to a state (first state) in which electrons are accumulated when an electric field is applied in one direction to said electron emitters, and change from said first state to a state (second state) in which electrons are emitted when an electric field is applied in another direction to said electron emitters, and said drive circuit is controlled to apply a voltage between a voltage for changing the electron emitters to said first state and a voltage for changing the electron emitters to a state
10 immediately prior to said second state, to electron emitters which are unselected.

15. A display apparatus according to claim 2,
characterized in that

20 said electron emitters are selected and unselected through corresponding select lines; and
 said drive circuit places the select lines of electron emitters which are unselected into a high impedance state.

25 16. A display apparatus characterized by:
 a plurality of electron emitters;
 select lines for selecting and unselecting said

electron emitters;

signal lines for supplying ON and OFF signals to electron emitters which are selected; and

5 a drive circuit for driving the electron emitters in a selection period, a reset period, and a non-selection period allocated to one frame which is a period for displaying one image;

10 wherein said drive circuit applies a voltage sufficient to cause the electron emitters to emit light, to electron emitters to emit light therefrom which are selected in said selection period;

15 applies a reference voltage serving as a central voltage across which a voltage varies in the non-selection period subsequent to the reset period, to electron emitters which are selected in said reset period; and

16 places the select lines of electron emitters which are unselected in said non-selection period into a high impedance state.

20 17. A display apparatus according to claim 16,
characterized in that

21 said non-selection period subsequent to the reset period has a time duration set depending on the gradation level of a next frame.

25 18. A display apparatus according to claim 16,
characterized in that

said non-selection period has a first non-selection period assigned prior to said reset period and a second non-selection period assigned subsequent to said reset period; and

5 said second non-selection period has a time duration set depending on the gradation level of a next frame.

10 19. A method of driving a display apparatus having a plurality of electron emitters arrayed in association with a plurality of pixels, for emitting electrons from the electron emitters to display an image, characterized by:

 the step of accumulating necessary charges in all the electron emitters in a first period; and

15 the step of applying a voltage required to emit electrons to all the electron emitters to cause a plurality of electron emitters which correspond to pixels to emit light therefrom, for emitting light from said pixels, in a second period after said first period.

20 20. A method for driving a display apparatus according to claim 19, characterized in that

 one image is displayed in a period as one frame, said one frame including said first period and said second period; and characterized by

25 the step of scanning all said electron emitters, and applying accumulation voltages depending on the luminance levels of corresponding pixels to the electron emitters

which correspond to pixels to emit light therefrom in said first period, to accumulate charges in amounts depending on the luminance levels of corresponding pixels in the electron emitters which correspond to pixels to emit light therefrom in said first period; and

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the step of applying a constant emission voltage to all the electron emitters in the second period after said first period, to emit electrons in amounts depending on the luminance levels of corresponding pixels from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the pixels.

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21. A method for driving a display apparatus according to claim 19, characterized in that

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one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having respective different luminance levels, each of said periods serving as one subfield, said one subfield including said first period and said second period; and characterized by

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the step of scanning all said electron emitters, applying a constant accumulation voltage to the electron emitters to emit light therefrom in said first period, to accumulate a constant amount of charges in the electron emitters to emit light therefrom in said first period; and

25

the step of applying emission voltages depending on luminance levels assigned to the subfields to all said

electron emitters in the second period after said first period, to emit electrons in amounts depending on the luminance levels assigned to the subfields from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the pixels.

5 22. A method for driving a display apparatus according to claim 19, characterized in that

10 one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having respective different luminance levels, each of said periods serving as one subfield, said one subfield including said first period and said second period; and characterized by

15 the step of scanning all said electron emitters, and applying accumulation voltages depending on luminance levels assigned to the subfields to the electron emitters to emit light therefrom in said first period, to accumulate charges in amounts depending on the luminance levels assigned to the subfields in the electron emitters to emit light therefrom in said first period; and

20 the step of applying a constant emission voltage to all said electron emitters in the second period after said first period, to emit electrons in amounts depending on the luminance levels assigned to the subfields from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the

pixels.

23. A method for driving a display apparatus according to claim 19, characterized in that

5 one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having the same luminance level, each of said periods serving as one linear subfield, said one linear subfield including said first period and said second period; and characterized by

10 the step of scanning all said electron emitters, and applying a constant accumulation voltage to the electron emitters to emit light therefrom in said linear subfields in said first period, to accumulate a constant amount of charges in the electron emitters to emit light therefrom in said linear subfields in said first period; and

15 the step of applying a constant emission voltage to all said electron emitters in the second period after said first period, to emit a constant amount of electrons from the electron emitters which correspond to pixels to emit light therefrom in the linear subfields in said second period, thereby emitting light from the pixels.

20 24. A method for driving a display apparatus according to claim 19, characterized in that

one image is displayed in a period as one frame, said one frame including said first period and said second period; and characterized by

the step of applying a constant accumulation voltage to all said electron emitters in said first period to accumulate a constant amount of charges in all said electron emitters in said first period; and

5 the step of scanning all said electron emitters and applying emission voltages depending on the luminance levels of corresponding pixels to the electron emitters which correspond to pixels to emit light therefrom in said second period after said first period, to emit electrons in amounts depending on the luminance levels of corresponding pixels from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the pixels.

10 25. A method for driving a display apparatus according to claim 19, characterized in that

15 one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having respective different luminance levels, each of said periods serving as one subfield, said one subfield including said first period and said second period; and characterized by

20 the step of applying accumulation voltages depending on luminance levels assigned to the subfields to all said electron emitters to emit light therefrom in said first period, to accumulate charges in amounts depending on the luminance levels assigned to the subfields in all said electron emitters in said first period; and

the step of scanning all said electron emitters and applying a constant emission voltage to said electron emitters to emit light therefrom in the second period after said first period, to emit electrons in amounts depending on
5 the luminance levels assigned to the subfields from the electron emitters which correspond to pixels to emit light therefrom in said second period, thereby emitting light from the pixels.

10 26. A method for driving a display apparatus according to claim 19, characterized in that

one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having respective different luminance levels, each of said periods serving as one subfield, said one subfield including said first period and said second period; and characterized by
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the step of applying a constant accumulation voltage to all said electron emitters in said first period, to accumulate a constant amount of charges in all said electron
20 emitters in said first period; and

the step of scanning all said electron emitters and applying emission voltages depending on the luminance levels assigned to the subfields to the electron emitters to emit light therefrom in said second period after said first period, to emit electrons in amounts depending on the luminance levels assigned to the subfields from the electron emitters which correspond to pixels to emit light therefrom
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in said second period, thereby emitting light from the pixels.

27. A method for driving a display apparatus according
5 to claim 19, characterized in that

one image is displayed in a period as one frame, said one frame being divided into a plurality of periods having the same luminance level, each of said periods serving as one linear subfield, said one linear subfield including said first period and said second period; and characterized by

10 applying a constant accumulation voltage to all said electron emitters in said first period, to accumulate a constant amount of charges in the electron emitters to emit light therefrom in the linear subfields in said first period; and

15 the step of scanning all said electron emitters and applying a constant emission voltage to the electron emitters to emit light therefrom in the linear subfields in said second period after said first period, to emit a constant amount of electrons from the electron emitters which correspond to pixels to emit light therefrom in the linear subfields in said second period, thereby emitting light from the pixels.

25 28. A method for driving a display apparatus according to claim 20, characterized in that

a pulse signal having a constant pulse amplitude is

generated; and

5 said pulse signal is amplitude-modulated to generate
said accumulation voltage in said first period.

29. A method for driving a display apparatus according
to claim 20, characterized in that

10 a pulse signal applicable to said electron emitters is
generated, said pulse signal having a voltage waveform
including a positive-going edge or a negative-going edge
which is continuously variable in level; and

15 said pulse signal is pulse-width-modulated to generate
said accumulation voltage in said first period.

30. A method for driving a display apparatus according
15 to claim 21, characterized in that

15 a pulse signal having a constant pulse amplitude is
generated; and

20 said pulse signal is amplitude-modulated to generate
said emission voltage in said second period.

31. A method for driving a display apparatus according
25 to claim 21, characterized in that

25 a pulse signal applicable to said electron emitters is
generated, said pulse signal having a voltage waveform
including a positive-going edge or a negative-going edge
which is continuously variable in level; and

25 said pulse signal is pulse-width-modulated to generate

said emission voltage in said second period.

32. A method for driving a display apparatus according to claim 19, characterized in that

5 said electron emitters have such characteristics that the electron emitters change to a state (first state) in which electrons are accumulated when an electric field is applied in one direction to said electron emitters, and change from said first state to a state (second state) in
10 which electrons are emitted when an electric field is applied in another direction to said electron emitters; and
 a voltage between a voltage for changing the electron emitters to said first state and a voltage for changing the electron emitters to a state immediately prior to said
15 second state, is applied to electron emitters which are unselected.

33. A method of driving a display apparatus according to claim 19, characterized in that

20 said electron emitters are selected and unselected through corresponding select lines; and
 the select lines of electron emitters which are unselected are placed into a high impedance state.

25 34. A method of driving a display apparatus having a plurality of electron emitters, select lines for selecting and unselecting said electron emitters, and signal lines for

supplying ON and OFF signals to electron emitters which are selected, characterized in that the electron emitters are driven in a selection period, a reset period, and a non-selection period allocated to one frame which is a period
5 for displaying one image;

wherein a voltage sufficient to cause the electron emitters to emit light is applied to electron emitters to emit light therefrom which are selected in said selection period;

10 a reference voltage serving as a central voltage across which a voltage varies in the non-selection period subsequent to the reset period is applied to electron emitters which are selected in said reset period; and
the select lines of electron emitters which are
15 unselected in said non-selection period is placed into a high impedance state.

35. A method of driving a display apparatus according to claim 34, characterized in that

20 said non-selection period subsequent to the reset period has a time duration set depending on the gradation level of a next frame.

36. A method of driving a display apparatus according to claim 34, characterized in that

25 said non-selection period has a first non-selection period assigned prior to said reset period and a second non-

selection period assigned subsequent to said reset period;
and

said second non-selection period has a time duration set depending on the gradation level of a next frame.

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37. An electron emitter characterized by charges required for electron emission are accumulated in a first period; and

a voltage required for electron emission is applied to emit electrons in an amount depending on the accumulated charges in a second period after said first period.

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38. An apparatus for driving a plurality of electron emitters by selecting at least one electron emitter from the 15 electron emitters and emitting electrons from the selected electron emitter, characterized in that

said electron emitters have such characteristics that the electron emitters change to a state (first state) in which electrons are accumulated when an electric field is applied in one direction to said electron emitters, and change from said first state to a state (second state) in which electrons are emitted when an electric field is applied in another direction to said electron emitters; and

a voltage between a voltage for changing the electron emitters to said first state and a voltage for changing the electron emitters to a state immediately prior to said second state, is applied to electron emitters which are

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25

unselected among the plurality of electron emitters.

39. An electron emission apparatus having a plurality of electron emitters, characterized in that

5 charges required for electron emission are accumulated in all the electron emitters in a first period; and
a voltage required for electron emission is applied to all the electron emitters to emit electrons in an amount depending on the charges accumulated in said electron
10 emitters in a second period after said first period.

40. An electron emission apparatus according to claim 39, characterized in that

15 accumulation voltages depending on charges to be accumulated in said electron emitters are applied in said first period; and

a constant emission voltage is applied to all said electron emitters in the second period after said first period.

20 41. An electron emission apparatus according to claim 40, characterized by

a pulse generating circuit for generating a pulse signal having a constant pulse amplitude; and
25 an amplitude modulating circuit for amplitude-modulating said pulse signal to generate said accumulation voltage in said first period.

42. An electron emission apparatus according to claim
40, characterized by

a pulse generating circuit for generating a pulse
signal applicable to said electron emitters, said pulse
signal having a voltage waveform including a positive-going
edge or a negative-going edge which is continuously variable
in level; and

a pulse width modulating circuit for pulse-width-modulating
said pulse signal to generate said accumulation
voltage in said first period.

43. An electron emission apparatus having a plurality
of electron emitters, characterized in that

a constant accumulation voltage is applied to all said
electron emitters to accumulate a constant amount of charges
in said electron emitters in a first period; and

emission voltages depending on amounts of electrons to
be emitted are applied to said electron emitters to cause
said electron emitters to emit electrons in the amounts
depending on the emission voltages in a second period after
said first period.

44. An electron emission apparatus according to claim
43, characterized by

a pulse generating circuit for generating a pulse
signal having a constant pulse amplitude; and
an amplitude modulating circuit for amplitude-

modulating said pulse signal to generate said emission voltage in said second period.

5 45. An electron emission apparatus according to claim
43, characterized by

10 a pulse generating circuit for generating a pulse signal applicable to said electron emitters, said pulse signal having a voltage waveform including a positive-going edge or a negative-going edge which is continuously variable in level; and

15 a pulse width modulating circuit for pulse-width-modulating said pulse signal to generate said emission voltage in said second period.

20 46. An electron emission apparatus according to claim
39, characterized in that

25 said electron emitters have such characteristics that the electron emitters change to a state (first state) in which electrons are accumulated when an electric field is applied in one direction to said electron emitters, and change from said first state to a state (second state) in which electrons are emitted when an electric field is applied in another direction to said electron emitters; and characterized by

30 a drive circuit for applying a voltage between a voltage for changing the electron emitters to said first state and a voltage for changing the electron emitters to a

state immediately prior to said second state, to electron emitters which are unselected.

47. A method of driving an electron emitter,
5 characterized by

the step of accumulating charges required for electron emission in a first period; and

10 the step of applying a voltage required for electron emission to emit electrons in an amount depending on the accumulated charges in a second period after said first period.

48. A method of driving a plurality of electron emitters by selecting at least one electron emitter from the 15 electron emitters and emitting electrons from the selected electron emitter, characterized in that

20 said electron emitters have such characteristics that the electron emitters change to a state (first state) in which electrons are accumulated when an electric field is applied in one direction to said electron emitters, and change from said first state to a state (second state) in which electrons are emitted when an electric field is applied in another direction to said electron emitters; and

25 a voltage between a voltage for changing the electron emitters to said first state and a voltage for changing the electron emitters to a state immediately prior to said second state, is applied to electron emitters which are

unselected among the plurality of electron emitters.

49. A method of driving an electron emission apparatus having a plurality of electron emitters, characterized in
5 that

charges required for electron emission are accumulated in all the electron emitters in a first period; and

a voltage required for electron emission is applied to all the electron emitters to emit electrons in an amount
10 depending on the charges accumulated in said electron emitters in a second period after said first period.

50. A method of driving an electron emission apparatus according to claim 49, characterized in that

15 accumulation voltages depending on charges to be accumulated in said electron emitters are applied in said first period; and

a constant emission voltage is applied to all said electron emitters in the second period after said first
20 period.

51. A method of driving an electron emission apparatus according to claim 50, characterized in that

a pulse signal having a constant pulse amplitude is
25 amplitude-modulated to generate said accumulation voltage in said first period.

52. A method of driving an electron emission apparatus according to claim 50, characterized in that

5 a pulse signal applicable to said electron emitters is generated, said pulse signal having a voltage waveform including a positive-going edge or a negative-going edge which is continuously variable in level; and

said pulse signal is pulse-width-modulated to generate said accumulated voltage in said first period.

10 53. A method of driving an electron emission apparatus having a plurality of electron emitters, characterized by

the step of applying a constant accumulation voltage to all said electron emitters to accumulate a constant amount of charges in said electron emitters in a first period; and

15 the step of applying emission voltages depending on amounts of electrons to be emitted to said electron emitters to cause said electron emitters to emit electrons in the amounts depending on the emission voltages in a second period after said first period.

20 54. A method of driving an electron emission apparatus according to claim 53, characterized in that

25 a pulse signal having a constant pulse amplitude is amplitude-modulated to generate said emission voltage in said second period.

55. A method of driving an electron emission apparatus

according to claim 53, characterized in that

a pulse signal applicable to said electron emitters is generated, said pulse signal having a voltage waveform including a positive-going edge or a negative-going edge which is continuously variable in level; and

5 said pulse signal is pulse-width-modulated to generate said emission voltage in said second period.

10 56. A method of driving an electron emission apparatus according to claim 49, characterized in that

15 said electron emitters have such characteristics that the electron emitters change to a state (first state) in which electrons are accumulated when an electric field is applied in one direction to said electron emitters, and change from said first state to a state (second state) in which electrons are emitted when an electric field is applied in another direction to said electron emitters; and

20 a voltage between a voltage for changing the electron emitters to said first state and a voltage for changing the electron emitters to a state immediately prior to said second state, is applied to electron emitters which are unselected.